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State of Hawaii Department of Health/Environmental Health Administration
Comments on a Proposed Rule for
40 CFR Part 131
Water Quality Standards for Coastal and Great Lakes Recreation Waters
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After review of EPA's proposed rule for using indicator bacteria for evaluating risks of fecal contamination in coastal recreational waters, particularly as it relates to Hawaii, the Hawaii State Department of Health (DOH) submits the following general recommendations and comments followed by the State's preferred options.

Part 1: General Recommendations and Comments

1. **Later State Rules:** We strongly support the provision that State Rules adopted after the these proposed EPA rules or any adopted EPA Rules become effective after EPA approval, without the need for amendment of the federal regulation, as long as Hawaii's criteria are as protective of human health as the EPA's 1986 fecal indicator criteria for coastal recreational waters. (Clean Water Act, Section 303 (i)). In general, DOH prefers that the State adopt its own rules for Hawaii, consistent with federal law. Furthermore, DOH has pending amendments on the indicator bacteria standards for coastal recreational waters currently in the Hawaii Administrative Rule, Chapter 11-54, Water Quality Standards (WQS), and has completed public hearings on some amendments to the chapter. DOH also intends further work on indicator bacteria issues.

2. **Reliability of Indicators:** For tropical waters there are questions about the reliability of enterococcus as a bacterial indicator for rule-making and decision-making for control of public health risks associated with fecal contamination in coastal recreational waters.

   Some scientists, including a leading Hawaii water researcher, believe that research demonstrates that fecal indicators in damp soil and in water originate primarily from non-human sources and both survive and multiply in soil and sediment reservoirs. Human sources identifiable as a result of sewage spills are immediately controlled, even before sampling results are available, but other sources are very difficult to track back to sources in Hawaii's watersheds.

   Differing views among the experts result in our having a low degree of confidence in the validity of EPA's indicator bacteria criteria, especially where most pollution sources are

non-point in origin. We refer to Fujioka & Byappanahalli (1). We are concerned about false positives and their implications.

On this subject we attach our response to public hearings testimony regarding proposed amendments to DOH Hawaii Administrative Rules (HAR), Chapter 11-54, Water Quality Standards.

3. **Waters to be Covered:** The State prefers to retain the 300 meter/1000-ft boundary in the State's current rule, demarcating the more frequently used near shore open coastal recreational waters from less-frequently used open coastal and oceanic waters further offshore. While Hawaii's rules designate recreation as a use for class A marine waters, and those waters extend three miles from shore, HAR section 11-54-8(b) designates the 300 meters/1000 feet from shore as "marine recreational waters" and only that section sets indicator bacteria limits for marine waters. Section 11-54-8(b) will retain that distinction in our proposed state amendment. DOH has not so far seen a need to adopt bacterial water quality standards for waters beyond 300 meters/1000 feet from shore.

   In any event, this is an issue of importance. The City and County of Honolulu challenges whether there is actual full body contact use of waters more than 1000 feet from shore and sees a multi-million dollar cost to implement the proposed federal rules. Without taking a position on the City's concerns, DOH believes that the State should retain the ultimate authority to determine the extent of the waters covered by indicator bacteria standards, consistent with federal law, and be able to address the issue through rule making and public participation procedures here in Hawaii.

4. **Geometric mean:** Assuming that there must be a geometric mean beyond 300 meters/1000 feet and given that EPA will adopt criteria for Hawaii, DOH does not propose different enterococcus criteria from EPA's proposal of 33 CFU/100 ml for inland waters and 35 CFU/100 ml for open coastal or oceanic waters. DOH refers to its comments on waters to be covered, item 3 above, and to the attached response to public comments on the proposed DOH rules.

5. **Cruise Ship Discharges:** The question of how the proposed rules will affect the cruise ship industry needs to be addressed. The federal Alaska cruise ship rules use fecal coliform standards. While DOH may not have jurisdiction over marine sanitation devices, we do have a strong interest and regulatory authority over the quality of receiving waters within the State's three-mile limit.

6. **Single Sample Maximum status:** We favor using a SSM as part of a water quality standard rule, and not just for decision making or as an implementation tool. DOH reserves its right to use secondary or supplemental indicators and other factors in making decisions.

Part 2: The State's Preferred Options

Given the options available in EPA's proposed rule, we recommend that only two tiers of beaches along with only two SSMs be incorporated into the final federal rule for Hawaii. (We believe that other states' preferences for their waters should be accommodated.) Two tiers will simplify the distinctions between the four proposed tiers and concentrate on protecting beaches that receive the highest use. The two tiers of beaches would both be within the State's present 300 meter/1000 foot marine recreational waters boundary (HAR sec. 11-54-08(b)).

For the two tiers of beaches, DOH recommends only two corresponding single sample maxima (SSMs) within Hawaii's existing 300 meter/1000-ft nearshore marine recreational waters boundary in order to simplify the classifications and maximize our efforts to protect the Tier 1- Designated Beaches (primary protection) and Tier 2- Other Beaches (secondary protection).

1. **Beach Tiers:**

    a. Tier 1- Designated Beaches, are defined as having the following characteristics – they are heavily used by the public for full body-contact recreation (bathing), and may be lifeguard protected, have parking and other public facilities. The DOH would develop a list of designated beaches.

    b. Tier 2 - Other Beaches, are beaches that are not Designated Beaches. They have the following characteristics - moderate use for bathing, light use for bathing, and infrequent use for bathing.

2. **Beach Tiers, Open Coastal and Oceanic Waters, and SSMs:**

    Within 300 meters/1000 feet of shore:

    a. For Tier 1- Designated Beaches, DOH proposes using the 75% UCL and an SSM = 104 enterococcus from shore to the 1000-ft seaward limit. Our intent is to be more protective at heavily used beaches.

    b. For Tier 2- Other Beaches, DOH proposes using the 82% UCL and an SSM = 158 enterococcus within the 1000-ft seaward limit.

    Beyond 300 meters/1000 feet of shore:

    c. Seaward of the 1000-ft boundary from shore out to the three-mile limit of State waters, DOH proposes using a standardized 95% UCL with an SSM = 501. (see Figure 1)

3. **Wildlife and Non-human Sources:**

    a. Hawaii does have feral animal populations such as rodents, deer, goats, and sheep, and birds, in addition to farm livestock and pets. None of these animals would be

considered wildlife for the purposes of this rule; but local marine mammals such as monk seals, dolphins, etc. do qualify as "wildlife". Given that the State does not have significant "wildlife" populations that could potentially contribute to consistently high enterococci contamination in nearshore waters, it stands to reason to exclude them.

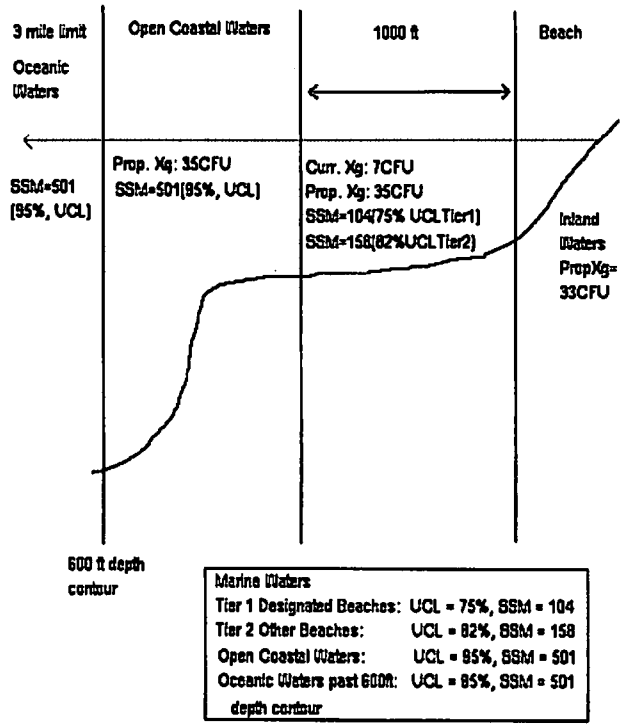
b. Hawaii also favors an option of excluding other non-human sources of enterococci contamination based upon appropriate study, which may include a sanitary survey.

DOH reserves its rights to develop state rules that differ from the preferences stated above. State rule making will give Hawaii's people a better chance to express their preferences.

We thank you for consideration of our comments and recommendations.

Figure 1

Proposed Coastal Waters Enterococcus Rule



RESPONSE TO PUBLIC COMMENTS
Amendments to H.A.R. Chapter 11-54, Water Quality Standards
Hawaii State Department of Health

May 13, 2004

Three written testimonies were received during the public comment period on proposed revisions to the State Department of Health (DOH) Hawaii Administrative Rule (H.A.R.), Chapter 11-54, Water Quality Standards. All testimonies pertain to the proposed use of indicator bacteria in the revision to H.A.R. section (§) 11-54-08, Specific criteria for recreational areas. The commenters are Roger Fujioka, Ph.D., Water Resources Research Center, University of Hawaii at Manoa (testimony received 03/25/04),; Mr. Don Piepgrass, Honolulu, Hawaii (testimony received 03/31/04); and Ms. Janet Ashman, Hawaii Agricultural Research Center (testimony received 03/31/04).

Because all three commenters addressed the same proposed amendment, we have prepared a single integrated response to their concerns. As a result of current EPA requirements, and despite the comments received during the public hearing, DOH has decided to adopt the amendments as proposed and recommend that the Governor approve them. We will forward the comments and our responses to the Governor.

General comments: - The commenters are correct that the new inland recreational waters enterococcus criterion, set by EPA at 33 C.F.U/ 100 ml fresh or brackish waters, is exceeded in many streams and estuaries and that there are many sources of these bacteria – including humans, domestic and feral animals, small mammals, birds, pets, and soil populations. Please note that the current federal criteria for enterococcus are set at 33 CFU per 100 ml water for inland waters, and at 35 CFU per 100 ml water for coastal waters. In a previous DOH rulemaking, the coastal enterococcus criterion was reduced from 35 to 7 CFU per 100 ml coastal water.

DOH is also concerned and unhappy that many Hawaii streams will constantly exceed the new indicator bacteria criteria because of non-human causes. We agree that trying to implement Total Maximum Daily Loads (TMDL) for indicator bacteria in such situations will be a difficult task. We intend to pursue the issue with EPA but will try to go higher up in EPA's chain-of-command before we go to Congress.

We are adopting these standards out of necessity and expediency. EPA requires these standards and if we do not adopt the standards, EPA will (See Clean Water Act Section 303(c)), and it will be much harder to change federal regulations than a state rule.

For the practical purpose of taking corrective action, the U.S. Environmental Protection Agency (EPA) recommends that, in locations such as Hawaii where year-round tropical or subtropical temperatures exist, the numerical criterion)geometric mean) should not be used by itself but in combination with sanitary surveys, especially in watersheds where undiscovered concentrated sources of untreated human or animal wastes may exist.

We stress that when DOH learns of a sewage spill, we ensure that immediate action is taken to warn the public, disinfect the site if appropriate, and sample the water until indicator bacteria counts (both enterococcus and Clostridium) return to background levels characteristic of the site, when warnings are removed. (We are unhappy with having to sample for two indicator bacteria, which essentially doubles sampling costs, because of the shortcomings of both indicators.) DOH's implementation policy for the enterococcus criteria, expressed in the technical support document accompanying the draft rule, states that we plan to enforce the new numerical criterion and the single sample maxima only if a source of raw sewage, either human or animal, is highly likely or demonstrated to be present in the watershed or adjacent coastal waters.

Comment on Liability – We disagree that our proposed rule will make us more vulnerable to lawsuits than inaction. Our vulnerability, if any, will be the same whether the enterococcus criterion is adopted in a state rule or a federal regulation.

Comment on signs - We have started working on warning signs for inland and coastal waters for a variety of hazards, including Leptospirosis as well as indicator bacteria, and are now coordinating beach sign design for sewage spills with the City. We plan to discuss the sign matter with the other counties and other agencies. We will continue to work on design and posting locations, and will talk to agencies that post hazard warning signs by the ocean or streams. We are also seeking to develop a web site to include water quality sampling results.

Comments on single sample maxima - The EPA requires that all states include EPA's single sample maxima for indicator bacteria in their rules for recreational waters. (CWA 303(c) and Federal BEACH Act) We know that these maxima are often exceeded in waters receiving significant levels of polluted runoff as well as treated sewage effluents. However, EPA is authorized by federal law to adopt federal water quality standards for states which do not adopt these standards, or stricter versions, in their own rules. [Citation, same as 3d para in general comments] We believe that the State should take responsibility for promulgating State-level regulations rather than defer to EPA, and have, for the present at least, decided to adopt the federal criteria (with the exception of the marine waters geometric mean criterion of 7 enterococcus per 100 ml water[1]).

[1] In the next federally-required three-year cycle for review and update of H.A.R. 11-54, DOH may propose replacement of the state geometric mean criterion of 7 with the federal level of 35 enterococcus per 100 ml coastal water. EPA is in agreement with DOH that Hawaii should raise its coastal enterococcus criterion to the federal level because adoption of the higher federal standard has not been shown to result, in practice, in an increased risk of minor illness after recreational use of states' surface waters. Switching to the federal criterion will allow us to compare recreational water quality in Hawaii to that of other states using the same criterion, until such time as more human-specific sewage indicators are identified and made widely available at a low cost for routine monitoring purposes.

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Comment on workshop: On March 1-2, 2001, a joint EPA/DOH workshop was held in Honolulu to solicit reviews of existing data and discussion among eighteen national and international scientists; the conclusion of the final report is that EPA recreational water criteria may not be reliable in tropical regions.

Although we are aware that many other indicators, such as Clostridium perfringens, may be used to trace untreated sewage sources, the workshop report did not change EPA's policy on use of fecal indicators. EPA continues to approve only indicators that have been included in epidemiology studies that involve a large number of people, exposures to varying degrees of contamination and found to be significantly correlated with the risk of illness, especially in relation to fecal indicators used in the NPDES permit program. These study requirements are frustrating in Hawaii where our small population size and practice of issuing warnings to protect people from sewage spills make conducting an appropriate study virtually impossible. Non-fecal pathogens, such as Leptospirosis (fresh waters only) and Staphylococcus (marine and fresh waters) are also of concern in recreational waters. These pathogens are not currently monitored by any agency, primarily because confirmed detections are difficult, expensive, and time-consuming. Risk levels need to be established for any replacement indicators that may be deemed suitable for Hawaii, and inexpensive and more rapid detection methods must be developed for existing and other indicators.

DOH does not have flexibility regarding the indicator bacteria types and criteria established by EPA. However, EPA has informed us that states may propose adoption of any recreational criteria they can justify and support, but only as state-level secondary indicators; retention of EPA's fecal bacteria as primary indicators is required. Hawaii did not adopt Clostridium perfringens or E. coli because we do not have a national-level public health risk assessment for Clostridium , and because EPA's other recommended fecal indicator, E. coli bacteria, die off faster than pathogens in warm ambient waters compared to the longer-lasting enterococcus populations. The only alternative at present is to have no indicator, a position unacceptable to both EPA and the State. The only practical solution at present is to use the EPA fecal indicators cautiously, and enforce the limits only if the source is clearly human or concentrated domestic or farm animal wastes.

Offshore recreational criteria - It is correct that there are no recreational waters criteria applicable to marine waters from points 1000 feet from shore out to the three-mile limit of State waters. The EPA has notified us that it intends to adopt the federal enterococcus criterion of 35/100 mL for those waters if the state does not do so. DOH intends to address this issue in its next round of water quality standards reviews.

EPA's position - One of the commenters recommends that DOH obtain a written assessment from EPA regarding the reliability of Hawaii's recreational waters criteria. DOH has for years discussed these issues with EPA, with the result EPA still requires states to adopt either EPA's enterococcus criteria or EPA's E. coli criteria. The EPA Guidance document on indicator bacteria is available for review on the agency's web site.

Comments on standards and criteria not proposed for amendment - The Hawaii Agricultural Research Center (HARC) comments reflect the uncertainty surrounding the appropriateness of

use of EPA's fecal indicator bacteria in Hawaii and focus primarily on sections of the rule not proposed for amendment at this time. DOH will address other sections of the rule during the next round of Water Quality Standards review.

In conclusion - Both EPA and DOH staff recommend reliance on the proper operation and maintenance of wastewater collection, treatment and disposal systems and on sanitary surveys, in addition to the numeric criteria, as the basis for action until such time as we have more human-specific, rapidly testable fecal indicators and can reduce the current level of bacterial sampling and reporting. DOH looks forward to the development of new methodologies for raw sewage detection, and will convert to the use of improved indicators as they become practically and legally available.

References

1. Fujioka & Byappanahalli. 2003. Proceedings and Report: Tropical Water Quality Indicator Workshop, Special Report SR-2004-01, University of Hawaii at Manoa, Water Resources Research Center, Honolulu, HI.